

A large school of silver fish, likely salmon, swimming in the water. The fish are densely packed and moving in a similar direction, creating a sense of motion. The water is a light blue-grey color.

**SECTION : K**

**FISHERIES  
DEVELOPMENT**





## NOTE ON THE FISHERIES SECTOR IN THE COUNTRY

### 1. INTRODUCTION

India is the second largest producer of fish in the world contributing to 5.68% of global fish production. India is also a major producer of fish through aquaculture and ranks second in the world after China. Fisheries sector occupies a very important place in the socio-economic development of the country. It has been recognized as a powerful income and employment generator as it stimulates growth of a number of subsidiary industries, and is a source of cheap and nutritious food besides being a foreign exchange earner. Most importantly, it is the source of livelihood for a large section of economically backward population of the country.

The fisheries sector is a source of livelihood for over 14.49 million people engaged fully, partially or in subsidiary activities pertaining to the sector. Besides, an equal number are engaged in ancillary activities in fisheries and aquaculture. Development of fisheries can ensure food security as well as tackle unemployment in these regions that are predominately inhabited by rural populace.

The total fish production during 2013-14(P) is at 9.58 million metric tonnes with a contribution of 6.14 million metric tonnes from inland sector and 3.44 million metric tonnes from marine sector respectively. The overall growth in fish production in 2013-14 has been 5.9%, which has been mainly due to 7.3% growth in inland fish production. The growth in marine fish production has been 3.7%.

There has been steady growth in the export of fish and fish products over the period. Efforts are being made to boost the export potential through diversification of products for export. During 2013-14 the volume of fish and fish products exported was 9,83,756 tonnes worth Rs. 30213.26 crores.

### 2. FISHERY RESOURCE

The country has a long coastline of 8118 km and equally large areas under estuaries, backwaters, lagoons etc., conducive for developing capture as well as culture fisheries. With the declaration of the Exclusive Economic Zone (EEZ) in 1977, an area of 2.02 million sq km, (comprising of 0.86 million sq. km on the west coast, 0.56 million sq.km on the east coast and 0.60 sq.km around the Andaman & Nicobar Islands) has come under our jurisdiction with absolute right of exploring, exploiting and natural utilization of living resources falling within it.

The inland fishery resources include 1.96 lakh kms stretch of rivers. and canals, 29.07 lakh hectare reservoirs, 24.40 lakh hectare ponds and tanks, 7.98 lakh hectare of beels, derelict water bodies and 12.40 lakh hectare brackish water areas.



### 3. SCHEMES RELATING TO DEVELOPMENT OF FISHERIES SECTOR

A sum of ₹ 2776 crore was earmarked for Centrally Sponsored/Central Sector Schemes during 11<sup>th</sup> plan period. Actual BE allocated for whole plan in the 11th plan period was ₹ 1279.62 crore and out of this an expenditure of ₹ 1209.97 crore was incurred which is 94.56 % of the total amount of allocation of the scheme. During the 12th plan a sum of ₹ 2483 crore has been earmarked for the development of Fisheries Sector. The details of the schemes administered by Department of Animal Husbandry, Dairying and Fisheries are as below:

- (i) Development of Inland Fisheries and Aquaculture.
- (ii) Development of Marine Fisheries, Infrastructure and Post Harvest Operations.
- (iii) National Scheme of Welfare of Fishermen
- (iv) National Fisheries Development Board (NFDB) and
- (v) Strengthening of Data base and Geographical Information System for Fisheries Sector.

#### 3.1 Development of Inland Fisheries and Aquaculture

This macro scheme covers all aspects related to inland fisheries such as brackish water, ponds, reservoirs, canals, use of waterlogged areas/ alkaline & saline soils etc for development of fisheries. The main objectives of the scheme envisages encouraging leasing of water area, expanding aquaculture by construction of new ponds, popularizing fish/shrimp farming, utilizing vast brackish water area for fish/shrimp culture, providing suitable technology package for promotion of cold water fisheries, utilizing saline/alkaline soil for raising commercial crop of fish, increase of fish production in capture as well as involving Fish Farmers Development Agencies (FFDAs) fully for development and delivery of sustainable aquaculture throughout the country.

Since inception of this scheme 8,69,661 hectares of fresh water bodies and 45,702 hectares of brackish water bodies have been developed till 30-03-2014 benefiting 14,66,737 and 39,496 fishers respectively.



Through the network of 429 Fish Farmers Development Agencies (FFDAs) and Brackishwater Fish Farmers Development Agencies (BFDAs) covering all potential districts across the country. During 2013-14, 22000 hectares of fresh water bodies and 2100 hectares brackish water bodies have been developed benefiting 26,000 fisheries and 2400 fishers respectively. As against RE of ₹ 33 crore a sum of ₹ 31.04 crore was spent under the scheme during 2013-14 so far.

### **3.2 Development of Marine fisheries, Infrastructure and Post Harvest Operations.**

This scheme envisaged augmentation of fish production and productivity in the marine fishing and thereby to improve food security export earnings and livelihood system of coastal fishing communities. The Centrally Sponsored scheme is continued during 12-Plan with the following major components:

- (a) Motorization of Traditional Craft
- (b) Safety of Fishermen at Sea
- (c) Fishermen Development Rebate on HSD Oil
- (d) Introduction of Intermediate Craft of Improved Design including proto-type study of new intermediate vessel design.
- (e) Establishment and operation of Vessel Monitoring System.
- (f) Promoting fuel efficient and environment friendly fishing practices
- (g) Management of Marine Fisheries

#### **3.2.1 Development of Marine Fisheries**

Since inception of the scheme 7 major fishing harbours, 76 minor fishing harbours and 210 fish landing centres have been taken up for implementation in various coastal States/UTs. Out of which, 7 major fishing harbours, 50 minor fishing harbours and 180 fish landing centres have been completed and put to use. Remaining are at various states of construction at present.

#### **3.2.2 Development of Infrastructure and Post Harvest Operations**

- (i) Establishment of Fishing Harbours and Fish Landing Centres
- (ii) Strengthening of Post Harvest Infrastructure
- (iii) Assistance for maintenance dredging of fishing harbours and fish landing centres.



### 3.2.3 Taking up Innovative Activities

This component has continued since 11<sup>th</sup> Plan with an aim to provide financial assistance for taking innovative activities in Marine fisheries/Infrastructure, Human Resources Development, Strengthening of fisheries Management, Monitoring, Evolution, Research & Development Studies.

### 3.3 National Scheme of Welfare of Fishermen

The Centrally Sponsored National Scheme of Welfare of fishermen comprising of four broad components as give below were in operation during the 11<sup>th</sup> Five Year Plan for the Welfare of the fishers in India.

- i) Development Model fishermen villages
- ii) Group Accident Insurance for Active fishermen
- iii) Saving-Cum-Relief Scheme
- iv) Training and extension

During 2013-14, 7822 fishermen houses have been approved for construction. 43,25,642 fisher provided insurance cover under group accident insurance component and 3,57,308 fishers provided relief under saving-cum-relief component. An expenditure of ₹ 52.15 crore was incurred under the scheme during 2013-14 as against RE of ₹ 55 crore.

### 3.4 Strengthening of Database and Geographical Information System for the Fisheries Sector

The aim of the scheme is to improve the database of inland and marine fisheries resources and catch of fish by adoption of standardized methodology of data collection through sample survey for estimation of inland and marine fisheries resources/catch. The total Budgetary allocation for 12<sup>th</sup> Five Year Plan for Database Scheme is ₹ 65.00 crores with the following Components:

- i) Sample Survey for Estimation of Inland Fishery Resources and their Potential,
- ii) Census on Marine Fisheries,
- iii) Catch Assessment Survey for Inland and Marine Fisheries,
- iv) Development of GIS,
- v) Development of database of fishery cooperatives of India,



- vi) Mapping of smaller water bodies and development of GIS based fishery management system,
- vii) Strengthening of Statistical Unit at Headquarter,
- viii) Evaluation Studies/Professional services,
- ix) Monitoring Control and Surveillance (MCS).

#### **4. INSTITUTIONAL ARRANGEMENTS FOR THE FISHERIES SECTOR**

In order to promote fisheries sector, Government of India has four Fisheries Institutes working under its administrative control. These institutions help in providing technical trained manpower to the sector, preparation of techno economic feasibility report for setting up of fishing harbour/fish landing centres etc, training in fish processing and other related activities.

##### **4.1 Central Institute of Fisheries, Nautical & Engineering Training (CIFNET), Cochin**

The primary objective of the Institute is to make available sufficient number of trained operatives for fishing vessels and technicians for shore establishments. The Institute conducts three regular courses namely Bachelor of Fishery Science (BFSc) (Nautical Science), Vessel Navigator Course (VNC) and Marine Fitter Course (MFC). The Institute is equipped with 3 fisheries training vessels at its 3 centres (Cochin, Chennai & Visakhapatnam) and conducting regular sailing for imparting on board practical training on fisheries, Navigation and Marine Engineering for Institutional and Post Institutional trainees. 570 candidates have been trained in short term courses 343 candidates were trained in long term duration courses during 2013-14.

##### **4.2 National Institute of Fisheries Post Harvest Technology and Training (NIFPHATT), Cochin**

The Integrated fisheries Project was renamed as 'National Institute of fisheries Post Harvest Technology and Training' in 2008. The motto of this organisation is to spread the message of zero wastage or rather complete utilization, thereby reducing the pressure on the available biomass, but at the same time catering and meeting all our nutritional requirements. The main objective of the Institute is to develop the value added product by way of process and product diversification from all varieties of fish including low value, unconventional species and seasonally abundant fishes. Imparting training (both regular and need based) in the field of post harvest technology, refrigeration technology, quality control and value added products. The training programmes include on the Job training to college and university students, fisherwomen self help groups.



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This Institute envisages processing popularization and test marketing of fishery products including those from unconventional varieties of fish. Popularization of novel products and technologies are achieved through test marketing, trade fairs & exhibitions, brochures & pamphlets, training and consultancy services. In addition to the Head Quarters in Kochi, the requirements of the east coast of India are being met by its unit in Vishakhapatnam. The Institute processed 103 MT of fish, marketed 96 MT of fish and trainee days attained for institute was 7568 during 2013-14.

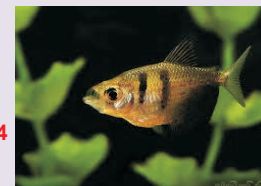
### **4.3 Central Institute of Coastal Engineering for Fishery (CICEF), Bangalore**

The objective of the Institute set up in 1968 with its office at Bangalore is to conduct engineering and economic investigation, preparation of techno-economic feasibility report for development of fishing harbours at suitable sites along the Indian Coast and brackish water fish farms. The Institute monitors the construction of fishery harbours sanctioned under centrally sponsored scheme by the Ministry of Agriculture and renders technical guidance to extend technical assistance to the maritime State Governments/UTs in preparation/ fish landing centres. The institute till end of March 2014 has carried out engineering and economic investigations at 88 sites for the development of fishery harbours, fish landing centres and prepared TEFRs for 87 sites.

### **4.4 Fishery Survey of India (FSI), Mumbai**

The Fishery Survey of India (FSI) is responsible for survey and assessment of marine fishery resources of the Indian EEZ with its headquarters at Mumbai. The FSI has seven operational bases at Porbandar, Mumbai, Mormugao and Kochi along with West Coast, Chennai and Visakhapatnam along the east coast and Port Blair in the Andaman & Nicobar Islands. A total of 11 ocean ongoing survey vessels are deployed for fisheries resources survey and monitoring. Besides resources surveys, the FSI monitors the fishery resources for the purpose of regulation and management, makes an assessment of suitability of different types of craft & gear for deep-sea and oceanic fishing, imparting in-vessel training to CIFNET/Polytechnic trainees, disseminates information on fishery resources through various media to the fishing community, industry, other end users etc. The institute has also been acting as an interface between the Ministry of Agriculture and the State Fisheries Departments relating to marine fish landing statistics. The FSI is also played a key role in popularization of modern fishing methods in the maritime States. The survey fleet of the institutes undertakes bottom trawl survey, midwater /columnar resources survey and long line survey for demersal, columnar and oceanic tunas and allied resources. The institute has operated 211220 hooks for tuna longline survey, conducted survey for 1845 fishing hours for bottom trawling, thus completed 798 fishing days by vessels during 2012-13.





#### 4.5 National Fisheries Development Board (NFDB)

National Fisheries Development Board (NFDB) has been set up in September 2006 with its head quarter in Hyderabad. The Board has been registered under Andhra Pradesh Society Registration Act 2001 on 10/07/06 to realize the untapped potential of fisheries sector in inland and marine fish capture, culture, processing & marketing of fish, and over all growth of fisheries sector with the application of modern tools of research & development including biotechnology for optimizing production and productivity from fisheries.

##### 4.5.1 Objective of the National Fisheries Development Board are:

- \* To bring activities relating to fisheries and aquaculture for focused attention and professional management.
- \* To coordinate activities pertaining to fisheries undertaken by different Ministries/Departments in the Central Government and also coordinate with the State/Union Territory Governments.
- \* To improve production, processing, storage, transport and marketing of the products of capture and culture fisheries.
- \* To achieve sustainable management and conservation of natural aquatic resources including the fish stocks.
- \* To apply modern tools of research and development including biotechnology for optimizing production and productivity from fisheries.
- \* To provide modern infrastructure mechanisms for fisheries and ensure their effective management and optimum utilization.
- \* To generate substantial employment.
- \* To train and empower women in the fisheries sector.
- \* To enhance contribute of fish towards food and nutritional security.

##### 4.5.2 Major activities to be taken up by the NFDB

To achieve the aforesaid objectives, the Board envisages to take up the various activities like intensive aquaculture in ponds and tanks, Enhancing productivity from Reservoir Fisheries, Coastal Aquaculture, Deep sea Fishing and Tuna Processing, Mariculture, Sea Ranching, Seaweed Cultivation, Infrastructure for Post Harvest Programmes, Fish Dressing Centres and Solar Drying of Fish, and Domestic Marketing. The other proposed activities which NFDB may take up include trout culture, ornamental artificial fish habitats, fish aggregation devices, mahseer breeding and culture, ornamental fish culture, mariculture of bivalves, marine pearl culture, setting up of aquaculture service centres, fisheries service centres etc.



## 5. OTHER ISSUES:

### 5.1 The Coastal Aquaculture Authority Act, 2005 (24 of 2005)

The Government of India enacted the Coastal Aquaculture Authority Act, 2005 (24 of 2005) on 23 June 2005 and established the Coastal Aquaculture Authority (CAA) vide Notification No. S.O. 1803 (E) dated 22 December 2005 for regulating the activities connected with aquaculture in coastal areas.

**The aims and objectives of the Authority** are to regulate 'coastal aquaculture activities in the areas notified by the Central Government as 'coastal areas' and for matters connected therewith or incidental thereto. The Authority is empowered to make regulations for the construction and operation of aquaculture farms in coastal areas, registration of aquaculture farms and hatcheries, inspection of farms and hatcheries for *L. Vannamei* to ascertain their environmental impact, removal or demolition of coastal aquaculture farms which cause pollution, fixing standards for all coastal aquaculture inputs, viz. Seed, feed, growth supplements, chemicals, etc. used in coastal aquaculture order to facilitate environmental responsible and socially acceptable coastal aquaculture for the socio-economic benefits of the various stakeholders involved in the activity.

The major responsibility of Coastal Aquaculture Authority is to ensure registration of all kinds of coastal, brackishwater and saline aquaculture farms and hatcheries engaged or going to be engaged in seed production and farming of saline and brackish water shrimp, fish and other aquatic organisms in the country within the notified area i.e. within two kilometres from the High Tide Line of the seas, creeks, rivers and backwaters. Registration is mandatory for all existing farms, new farms as well as for farms that may be renovated for taking up coastal aquaculture activities in future. Registration is valid for a period of five years, which can be renewed from time to time for a like period.

Coastal Aquaculture Authority has been authorised, vide Notification dated 15<sup>th</sup> October, 2008 issued by the Department of Animal husbandry, Dairying and Fisheries, Ministry of Agriculture under the Livestock Importation Act, 1898 (as amended by Livestock Importation Act, 2001) to grant permission for importing brood stock of SPF *Litopenaeus vannamei* and to grant approvals for seed production in biosecured hatcheries and farming in biosecured farms.

By the Coastal Aquaculture (Amendment) Rules, 2009, Guidelines were issued for regulating hatcheries and farms for introduction of SPF *L. vannamei*. These hatchery guidelines contain the criteria for application to breed *L. vannamei*, the technical requirements, procedures for production and sale of SPF *L. vannamei* seeds and specific norms and regulations for approval and operation of farms.



To facilitate smooth operation by the hatchery operators and shrimp farmers, Government of India came out with further amendments to the CAA Rules, 2005 through a Notification in March 2012 by permitting import of SPF juveniles of *L. vannamei* up to 10 g for rearing to adult brood stock, sale of nauplii among the permitted hatcheries and for shifting culture of one species to another after adequate dry out period. This Notification also strengthens the inspection process to deal with unauthorised seed production and farming of *L. vannamei* through destruction of the unauthorised stock by the Inspection Team of CAA.

Coastal Aquaculture Authority is following these Guidelines in permitting hatcheries and farms to take up *L. vannamei* farming and in the inspection and monitoring of the farms and hatcheries for the sustainable development of this venture.

A total of 26,842 shrimp farms with total farm area of 44,144.62 ha (WSA 30,306.08 ha) have been registered since inception (December 2005) till December 2013, out of which 833 farms with total farm area of 1176.55 ha (WSA 736.46 ha) were registered during the current year (April-December 2013). Besides the registration certificates of a total of 299 farms with total farm area 592.51 ha (WSA 437.12 ha) were renewed by the Authority for a further period of five years.

On the basis of the Inspection Team's report, a total of 117 SPF *L. vannamei* hatcheries with production capacity of 8,776 million seeds were approved/ renewed for importing brood stock of SPF *L. vannamei* from 9 brood stock suppliers shortlisted by CAA during the year. A total of 70,208 pairs of brood stock were approved by the CAA for import during the current year.

After scrutinising the applications received from the farmers and based on the Inspection Team's report, 861 SPF *L. vannamei* farms with total farm area of 9008.71 ha (WSA 6,072.32 ha) were registered since commencement of the programme (August 2009) till December 2013, out of which 59 SPF *L. vannamei* farms with a total area of 579.49 (WSA 354.68) were registered during the current year (April-December 2013) for culturing SPF *L. vannamei*.

A total of 30 visits were made by the Inspection Team to unapproved hatcheries on receipt of complaints regarding illegal seed production of *L. vannamei*.

Three awareness programmes were conducted during the year, one at Valsad District of Gujarat on 6-August, 2013 and three in East Godavari District of Andhra Pradesh, in which 170 farmers and State Fisheries officials of these states participated. During the programmes, main content of CAA act, 2005 relevant to farming, aims, objectives, powers and functions of CAA, antibiotic residues, responsible aquaculture and guidelines for regulating hatcheries and farms for introduction of SPF *L. vannamei* were explained and handouts in vernacular languages were distributed.



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In order to achieve the goal of sustainable aquaculture, two public notices were issued to create awareness among shrimp farmers and hatchery operators on the need to register farms and hatcheries with CAA and the importance of biosecurity and good culture practices in farms and hatcheries. The importance of renewal of CAA registration for continuing coastal aquaculture and the need for specific approvals for SPF *L. vannamei* seed production and farming from CAA and on diseases surveillance were highlighted in the Public Notice.

The water quality monitoring laboratory establishment in the Technical Section of CAA at Vepery is equipped with instruments such as GC-MS, CHNSO Analyser, Spectrophotometer, Nitrogen Keltec-Distillation Unit, Mutli-parameter water quality sondes, Millipore titration system, BOD Incubator, COD Analyser, etc. to monitor the quality of waste water discharged from the ETS of hatcheries and farms to ensure that the water quality parameters conform to the standard specified by CAA in its guidelines.

### **5.2 Comprehensive Marine Fishing Policy:**

Comprehensive Marine Fishing Policy 2004 has been launched in November 2004 to augment marine fish production of the country up to the sustainable level in a responsible manner so as to boost export of sea food from the country and also to increase per capita fish protein intake of the masses; to ensure socio-economic security of the artisanal fishermen whose livelihood solely depends on the vocation; and to ensure sustainable development of marine fisheries with due concern for ecological integrity and bio-diversity. Suitable measures are being taken up to implement this policy in the over all development of the marine fisheries sector.

### **5.3 Long term leasing policy for inland water bodies:**

Government of India continues to persuade the all stakeholders to have a long term leasing policy to lease out the inland water bodies for longer period that is for 5 to 10 years to attract investment from financial institutions. Accordingly, all the State Government /UT Administration have been requested to make such policies and implement for development of freshwater fisheries and aquaculture. Some states have started adopting such practices, but others are yet to take initiatives in this regard.

### **5.4 Uniform ban on fishing:**

There is utmost requirement to have uniform ban on fishing on both the coasts during monsoon a season for breeding of fish. Guidelines and instructions have already been issued to all the States/UTs. A uniform ban imposed on fishing by all fishing vessels in the Indian Exclusive Economic Zone (EEZ) beyond territorial waters. on the East Coast including Andaman & Nicobar Islands and West Coast including Lakshadweep Islands as per periods mentioned below for conservation and effective management of fishery resources and also for sea safety seasons:

East Coast - from 15<sup>th</sup> April to 31<sup>st</sup> May, 2014 (both days inclusive) (47 days)

West Coast – from 15<sup>th</sup> June to 31 July, 2014 (both days inclusive) (47 days)

